

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2000-218445  
(43)Date of publication of application : 08.08.2000

(51)Int.Cl.  
B23P 6/00  
B01J 19/00  
C23C 16/04  
C23C 16/34  
H03K 5/13

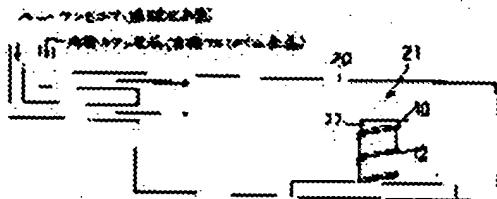
(21)Application number : 11-026143 (71)Applicant : AGENCY OF IND SCIENCE & TECHNOL  
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## (54) SURFACE IMPROVEMENT OF MACHINE ELEMENT COMPONENT

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To improve the surface defect by intermittently feeding the vapour phase material into a reaction chamber under a condition to minimize the growth of crystal on a reference surface, after placing a machine element component in a specific reaction chamber, and executing an atomic layer growing process to the machine element component.

**SOLUTION:** A tool (machine element component) 10 comprises a spiral projection part 12 on an outer peripheral surface of a cylindrical base 11. The tool 10 is installed inside of a reaction pipe 20, and the vapour phase material is fed to a reaction chamber 21 in pulse sequence. On this occasion, a condition to minimize the growth of crystal on a reference surface as a repair target surface, is selected. As the vapour phase material, for example, organic titanium metal and hydroxide of nitrogen (ammonia) are alternately fed in pulse sequence. By feeding the vapour phase material into the reaction pipe 20 under this condition, the growing of crystal in a zone except for the reference surface, is mainly executed on the projection part 12 by the atomic layer growing method, and the tool 10 can be repaired without increasing the unevenness existing on the surface.



### LEGAL STATUS

[Date of request for examination] 03.02.1999

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 2995300

[Date of registration] 29.10.1999

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]